Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for use in a moving pictures encoder for encoding a sequence of segments each having at least one image, comprising the steps of:

a) determining an overall target bit rate for encoding the sequence of images;

b) determining a bit allocation and target ~~quantisation~~quantization step size for encoding a first segment on the basis of a segment target bit rate calculated using said overall target bit rate;

c) encoding said first segment using a variable bit rate encoding method according to the target ~~quantisation~~quantization step size;

d) determining a difference between the number of bits used to encode said first segment and said first segment bit allocation;

e) distributing said difference for use in encoding at least on subsequent segment to determine a subsequent segment bit allocation;

f) determining a new target ~~quantisation~~quantization step size for encoding a said subsequent segment on the basis of a new target segment bit rate calculated using said segment target bit rate and the distributed difference; and

g) encoding said subsequent segment using a variable bit rate encoding method according to a new target ~~quantisation~~quantization step size;

wherein variable bit rate encoding is employed for encoding pictures within a segment whilst maintaining a substantially constant bit rate over said sequence.

2. (Original) A method as claimed in claim 1, wherein the steps d) to g) are carried out iteratively using the number of bits used to encode the subsequent segment and the subsequent segment bit allocation for determining said difference.

3. (Original) A method as claimed in claim 1 or 2, wherein each segment comprises at least one group of pictures having an I-picture and optionally at least one P and/or B-picture.

4. (Currently Amended) A method as claimed in claim 2 ~~or 3~~, wherein the difference between the number of bits used to encode the first segment and said first segment bit allocation is determined according to:

$$bits\_diff = \frac{overall\_BR \; x \; N_{segment}}{picture\_rate} - bits\_segment$$

where:

bits_diff	is said difference,
overall_BR	is the overall target bit rate,
$N_{segment}$	is the number of coded images in the first segment, and
bits_segment	is the actual number of bits used to encode the first segment.

5. (Original) A method as claimed in claim 4, wherein said difference is distributed according to:

$$delta\_bits_m = f(m) \, x \; bits\_diff$$

where $delta\_bits_m$ is the bits difference distributed to next m^{th} segment in the sequence,

$m = l,...,k$

k is a positive integer, and

$f(m)$ is a bit distribution function, wherein $\sum^k f(m) = 1$.

6. (Original) A method as claimed in claim 5, where $f(m) = 1/k$.

7. (Original) A method as claimed in claim 5 or 6, wherein the steps d) to g) are carried out iteratively using the number of bits used to encode the subsequent segment and the subsequent segment bit allocation for determining said difference.

8. (Currently Amended) A method as claimed in claim 7, wherein the new target ~~quantisation~~quantization step size is calculated according to:

$$\Delta Q = target\_Q' \, x \, \frac{(segment\_BR - segment\_BR')}{K \, x \, segment\_BR'}$$

$$target\_Q = target\_Q' + \Delta Q$$

where *target_Q* is the new target ~~quantisation~~quantization step size,

segment_BR is the new target bit rate,

target_Q' is the target ~~quantisation~~quantization step size of the preceding segment,

segment_BR' is the target segment bit rate of the preceding segment, and

K is a constant.

9. (Currently Amended) A method as claimed in claim 7~~ or 8~~, wherein for each subsequent segment the difference between the number of bits used to encode the segment and the segment bit allocation is determined according to:

$$bits\_diff = \frac{segment\_BR \, x \, N_{segment}}{picture\_rate} - bits\_segment$$

where:

bits_diff	is said difference,
segment_BR	is the segment target bit rate,
$N_{segment}$	is the number of coded images in the segment, and
bits_segment	is the actual number of bits used to encode the segment.

10. (Original) A method as claimed in claim 9, wherein said difference is distributed according to:

$$delta\_bits_m = f(m) \, x \, bits\_diff$$

where $delta\_bits_m$ is the bits difference distributed to the next m^{th} segment in the sequence,

$m = l,...,k,$

k is a positive integer, and

$f(m)$ is a bit distribution function, where $\sum^{k} f(m) = 1$.

11. (Original) A method as claimed in claim 10, where $f(m) = 1/k$.

12. (Currently Amended) A method for encoding moving pictures in a moving pictures encoder wherein a sequence of images are provided as input, the sequence of images comprising a plurality of segments each having a plurality of images, the method including:

a) determining an overall target bit rate for encoding the sequence of images;

b) maintaining a distribution record of bits from at least one previously encoded segment allocated for use in encoding at least one segment to be encoded;

c) determining a target segment bit rate for a segment of the sequence of images on the basis of the overall target bit rate and a bit rate change calculated from the corresponding allocated bits from the distribution record;

d) determining a target segment encoding quality from the target segment bit rate, a preceding target segment bit rate and a preceding target segment encoding quality,; and

e) encoding the images of the segment according to the target segment encoding quality using a variable bit rate encoding technique taking into account scene complexities of the images in the segment;

wherein maintaining said distribution record includes determining a difference between the number of bits used to encode a particular segment and the number of bits allocated for encoding the particular segment on the basis of the target segment encoding quality.

13. (Original) A method as claimed in claim 12, wherein steps b) to e) are carried out iteratively for said sequence of segments.

14. (Original) A method as claimed in claim 13, wherein each segment comprises at least one group of pictures having an I-picture and optionally at least one P and/or B-picture.

15. (Original) A method as claimed in claim 12, 13 or 14, wherein the target segment encoding quality is calculated according to:

$$\Delta Q = target\_Q' \, x \, \frac{(segment\_BR - segment\_BR')}{K \, x \, segment\_BR'}$$

$$target\_Q = target\_Q' + \Delta Q$$

where $target\_Q$ is the target segment encoding quality,

$segment\_BR$ is the target segment bit rate,

$target\_Q'$ is the preceding target segment encoding quality,

$segment\_BR'$ is the preceding target segment bit rate, and

K is a constant.

16. (Original) A method as claimed in claim 15, wherein the difference between the number of bits used to encode a particular segment and the number of bits allocated for encoding the particular segment is determined according to:

$$bits\_diff = \frac{segment\_BR \, x \, N_{segment}}{picture\_rate} - bits\_segment$$

where:

$bits\_diff$	is said difference,
$segment\_BR$	is the segment target bit rate,
$N_{segment}$	is the number of coded images in the segment, and
$bits\_segment$	is the actual number of bits used to encode the segment.

17. (Original) A method as claimed in claim 16, wherein the allocation of bits in the distribution record is calculated according to:

$$delta\_bits_m = f(m) \, x \, bits\_diff$$

where $delta\_bits_m$ is the bits difference allocated to next m^{th} segment in the sequence,

$m = l,...,k,$

k is a positive integer, and

$f(m)$ is a bit distribution function, where $\sum^{k} f(m) = 1$.

18. (Original) A method as claimed in claim 17, where $f(m) = 1/k$.

19. (Original) A method for controlling bit allocation in a moving pictures encoder for encoding a sequence of images comprising a plurality of segments each having a plurality of images, the method including, for each segment:

determining a difference between a number of bits used for encoding a previous segment and a number of bits allocated for encoding the previous segment;

calculating a bits distribution from the determined bits difference and a predetermined distribution function;

calculating a bit rate change from the bits distribution and a predetermined number of images in the segment;

calculating a target segment bit rate from the bit rate change and a predetermined target overall bit rate for the sequence of images; and

determining a target segment encoding quality from the target segment bit rate.

20. (Original) A method as claimed in claim 19, wherein the difference between the number of bits for encoding the previous segment and the number of bits allocated for encoding the previous segment is determined according to:

$$bits\_diff = \frac{segment\_BR \ x \ N_{segment}}{picture\_rate} - bits\_segment$$

where:

bits_diff	is said difference,
segment_BR	is the previous segment target bit rate,
$N_{segment}$	is the number of coded images in the previous segment, and
bits_segment	is the actual number of bits used to encode the previous segment.

21. (Original) A method as claimed in claim 20, wherein the bits distribution is calculated according to:

$$delta\_bits_m = f(m) \ x \ bits\_diff$$

where $delta\_bits_m$ is the number of bits difference allocated to next m^{th} segment in the sequence,

$m = l,...,k$,

k is a positive integer, and

$f(m)$ is a bit distribution function, where $\sum^{k} f(m) = 1$.

22. (Original) A method as claimed in claim 21, where $f(m) = 1/k$.

23. (Original) A method as claimed in any one of claims 19 to 22, wherein the target segment encoding quality is calculated according to:

$$\Delta Q = target\_Q' \, x \, \frac{(segment\_BR - segment\_BR')}{K \; x \; segment\_BR'}$$

$$target\_Q = target\_Q' + \Delta Q$$

where $target\_Q$ is the target segment encoding quality,

$segment\_BR$ is the target segment bit rate,

$target\_Q'$ is the previous segment target segment encoding quality,

$segment\_BR'$ is the previous segment target segment bit rate, and

K is a constant.

24. (Currently Amended) An encoding quality adjustment processor for generating a target segment encoding quality value in a moving pictures encoder for encoding a series of segments each having at least one image using a variable bit rate encoding scheme whilst maintaining a substantially constant overall bit rate, comprising:

a bits difference computation means coupled to receive a segment encoding bit ~~utilisation~~ utilization value and a target segment bit rate and generate therefrom a bits difference value representing a difference in bits allocated and bits used for encoding a segment;

a bits distribution means coupled to the bits difference computation means for computing at least one bits distribution value from the bits difference value and a predetermined distribution function;

a bit rate difference computation means coupled to the bits distribution means for computing a segment bit rate difference from the at least one bits distribution value and a predetermined number of images in a segment;

a target segment bit rate adjustment means coupled to the bit rate difference computation means and the bit difference computation means for computing said target segment bit rate from the segment bit rate difference and a predetermined target overall bit rate for the sequence of segments; and

an encoding quality computation means coupled to the target segment bit rate adjustment means for computing a target segment encoding quality value from said target segment bit rate.

25. (Currently Amended) A moving picture encoder comprising:

a coding processor for encoding picture data based on macroblocks according to a ~~quantisation~~quantization step size;

a virtual buffer processor coupled to the coding processor for tracking a number of bits used for encoding successive macroblocks in a picture and a number of bits used for encoding successive pictures in a group of pictures;

a ~~quantisation~~quantization step size processor coupled to the coding processor for determining said ~~quantisation~~quantization step size from a target number bits allocated for a picture and the number of bits already used for encoding macroblocks in that picture;

a picture bit allocation processor coupled to the ~~quantisation~~quantization step size processor for determining said target number of bits allocated for a picture from a target bit rate and the number of bits already used for encoding pictures in a current group of pictures;

a bit rate adjustment processor coupled to the picture bit allocation processor, the virtual buffer processor and the ~~quantisation~~quantization step size processor for determining said target bit rate from the number of bits already used for encoding successive pictures in the current group of pictures, a target encoding ~~quantisation~~quantization step size and an average ~~quantisation~~quantization step size for pictures in the current group of pictures; and

a target encoding ~~quantisation~~quantization step size processor coupled to the bit rate adjustment processor and the virtual buffer processor for determining said target encoding ~~quantisation~~quantization step size from a predetermined target overall bit rate and the number of bits used for encoding a preceding group of pictures.

26. (New) The encoder of claim 25, wherein the picture bit allocation processor is structured to determine said target number of bits based on a difference between the number of bits used to encode a previous picture in the current group of pictures and a target number of bits allocated to the previous picture, the difference being determined according to:

$$bits\_diff = \frac{overall\_BR \ x \ N_{segment}}{picture\_rate} - bits\_segment$$

where:

$bits\_diff$ is said difference,

$overall\_BR$ is the target overall bit rate,

$N_{segment}$ is the number of coded images in the current group of pictures,

and

$bits\_segment$ is the actual number of bits used to encode the previous picture.

27. (New) The encoder of claim 25, wherein the target encoding quantization step size processor is structured to calculate said target encoding quantization step size is calculated according to:

$$\Delta Q = target\_Q' \ x \ \frac{(segment\_BR - segment\_BR')}{K \ x \ segment\_BR'}$$

$$target\_Q = target\_Q' + \Delta Q$$

where $target\_Q$ is the target encoding quantization step size,

$segment\_BR$ is the target bit rate,

$target\_Q'$ is a target quantization step size of a preceding picture,

$segment\_BR'$ is a target bit rate of the preceding picture, and

K is a constant.

28. (New) The encoding quality adjustment processor of claim 24, wherein the bits difference computation means determines the difference in bits allocated and bits used for encoding the segment is determined according to:

$$bits\_diff = \frac{segment\_BR \; x \; N_{segment}}{picture\_rate} - bits\_segment$$

where:

bits_diff	is said difference,
segment_BR	is the target segment bit rate,
$N_{segment}$	is the number of coded images in the segment, and
bits_segment	is the actual number of bits used to encode the segment.

29. (New) The encoding quality adjustment processor of claim 24, wherein the target segment encoding quality is calculated according to:

$$\Delta Q = target\_Q' \; x \; \frac{(segment\_BR - segment\_BR')}{K \; x \; segment\_BR'}$$

$$target\_Q = target\_Q' + \Delta Q$$

where *target_Q* is the target segment encoding quality,

segment_BR is the target segment bit rate,

target_Q' is a preceding target segment encoding quality,

segment_BR' is a preceding target segment bit rate, and

K is a constant.